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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/616,701	07/10/2003	B. Ryland Wiggs	N9556-MJP	1567
23456	7590	12/05/2005	EXAMINER	
WADDEY & PATTERSON 1600 DIVISION STREET, SUITE 500 NASHVILLE, TN 37203			ALI, MOHAMMAD M	
			ART UNIT	PAPER NUMBER
			3744	

DATE MAILED: 12/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/616,701		WIGGS, B. RYLAND	
	<b>Examiner</b>		<b>Art Unit</b>	
	Mohammad Ali		3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 November 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 38-59 is/are pending in the application.
- 4a) Of the above claim(s) 46-58 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 39, 43 and 45 is/are allowed.
- 6) ☒ Claim(s) 38, 40-42, 44 and 59 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 38, 40, 42, 44 and 59 are rejected under 35 U.S.C. 102(b) as being anticipated by Balch (4,205,718). Balch discloses a solar-earth thermal heat system comprising a solar collector 10 and the heat acquired by the solar collector 10 is conveyed by means of fluid tubing/conduit 40/42; and the solar heat is transferred by a solar heat to direct expansion system refrigerant fluid heat exchange means 110 to the refrigerant fluid in a direct expansion system, the tubing 40/42 being heat transfer tubing is inherently insulated by, a pump 112 is provided for operating or terminating the operation of solar heat transfer system, an inverted U tube with pipe 142. See Fig. 1, 4 and 8..

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Balch. Balch discloses the invention substantially as claimed as stated above. However, Balch does not disclose the refrigerant fluid heat exchange means at an elevation above the

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solar heat collector. Choosing the location of the refrigerant fluid heat exchanger with respect to the solar heat collector is an obvious choice of an individual skilled in the art since there is no criticality or unexpected result from it.

## **G**

### ***Allowable Subject Matter***

Claims 39, 43 and 45 are allowed.

### ***Response to Arguments***

Applicant's arguments filed 11/14/05 have been fully considered but they are not persuasive. The Applicant argued, "The rejection based on Balch is based on an impression stated in the Office Action that in Balch, the solar heat is transferred to a direct expansion system refrigerant fluid heat exchange means to the refrigerant fluid in a direct expansion system, with a pump provided for operating or terminating the solar heat transfer (implied to the direct expansion system). In fact, Balch's invention does not encompass a direct expansion system as required by the rejected claims. Balch's specific reference to the type of heat pump applicable to his invention is found at column 5, line 19, wherein Balch states: 'The heat pump may be of any Further, Balch's drawings all show a conventional heat pump conventional type.'" type, which is well understood by those skilled in the art to be comprised of an air-source heat pump. Air source heat pumps currently comprise about 99% of the heat pump market, with about 99.5% of the remaining 1% primarily being comprised of water-source geothermal heat pump system designs (which is neither shown nor referenced by Balch).

Approximately 0.5% of the geothermal heat pump market is comprised of direct exchange/direct expansion (DX") heat pump system designs. The conventional air-source heat pump system disclosed by Balch will not operate as a DX system as disclosed by Applicant. Although some aspects of air-source heat pumps and DX heat pumps are similar, the fundamental operative technologies are different. The differences between conventional heat pump systems and DX systems are well understood by those skilled in DX heat pump art. Further, upon close examination, it is apparent that the solar heat transfer and storage mechanisms utilized by Applicant are significantly different from those disclosed by Balch. For example,

Balch utilizes upper and lower heat transfer jackets buried in the ground (column 8, lines 27 - 39), whereas Applicant utilizes an insulated tube within a geothermally exposed pipe design, together with an above-ground containment design. The water flow and solar heat transfer designs between Balch and Applicant's invention significantly differ. Balch's invention comprises ducts for selectively circulating fluids between the conventional heat pump and the upper and lower heat transfer jackets of the buried thermal unit (see Balch's Abstract (57)). Applicant's invention provides an above-ground means, of a completely different design, to transfer geothermal and solar heat to the copper tubing of a DX system. For the foregoing reasons, Applicant respectfully submits that the rejection of Claims 38, 40, 42, 44 and 59 under 35 U.S.C. (102) should be withdrawn." The Examiner disagrees. The detail definition of direct expansion (DX) is nowhere mentioned in the Applicant's specification except the very disclosure "direct expansion (DX)". Thanks to Applicant for trying to give an

understanding about the direct expansion heat pump system as explained above. However, the Examiner finds the clear picture of direct expansion type heat pump system as follows. "Geothermal heat pump systems may be of two types: a direct exchange system (some times called a direct expansion system) or water source system. In a direct exchange system, a heat transfer fluid, i.e., a refrigerant fluid, that flows through an indoor portion of the system also flows through an outdoor thermally conductive conduit that is embedded in the ground. Heat transfer occurs between the refrigerant and the soil via the walls of the conduit. The soil therefore acts as a heat sink or a heat source." See column 3, lines 1-18 of US Patent 5,758,514 A to Genung et al. The next Para also details about the water source system. From the above disclosure Balch's reference is belongs to a direct expansion system heat pump. Regarding constructional differences between the Applicant's Figures and Balch's Figures it is mentioned here that the Applicant's arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references. Therefore, the rejections are proper.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the


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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mohammad Ali whose telephone number is (571) 272-4806. The examiner can normally be reached on Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Melba Bumgarner can be reached on (571) 272-4709. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Mohammad M. Ali  
November 29, 2005

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